

COMPLETE LISTING OF THE CLAIMS

The following lists all of the claims that are or were in the above-identified patent application. The status identifiers respectively provided in parentheses following the claim numbers indicate the current statuses of the claims. In particular, claims having the status of "currently amended" are being amended in this reply.

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1. (Cancelled) A grating scale measurement system comprising:
a telephoto lens positioned to form an image of a grating, wherein the telephoto lens comprises a plurality of aspheric lenses; and
a detector positioned to measure movement of an intensity distribution in an image plane of the telephoto lens.

2. (Cancelled) The system of claim 1, wherein the telephoto lens comprises:
a first aspheric lens and a second aspheric lens positioned to form a subsystem that operates at finite conjugates; and
a magnifying system positioned to magnify an image of the subsystem.

3. (Currently Amended) ~~The A grating scale measurement system of claim 2~~ comprising:
a telephoto lens positioned to form an image of a grating, wherein the telephoto lens comprises:
a first aspheric lens and a second aspheric lens positioned to form a subsystem that operates at finite conjugates; and
a magnifying system positioned to magnify an image of the subsystem,
wherein the magnifying system comprises a first negative lens, which has a negative focal length; and
a detector positioned to measure movement of an intensity distribution in an image plane of the telephoto lens.

4. (Currently Amended) The system of claim 3, ~~where in~~ wherein the magnifying system further comprises a second negative lens, which has a negative focal length.

5. (Currently Amended) The system of claim ~~2~~ 3, wherein the first and second aspheric lenses are substantially identical.

6. (Currently Amended) ~~The A grating scale measurement system of claim 2~~
comprising:

a telephoto lens positioned to form an image of a grating, wherein the telephoto lens comprises:

a first aspheric lens and a second aspheric lens positioned to form a subsystem that operates at finite conjugates; and
a magnifying system positioned to magnify an image of the subsystem; and
a detector positioned to measure movement of an intensity distribution in an image plane of the telephoto lens, wherein:

the first aspheric lens is positioned so that an object is at a focal point of the first aspheric lens; and

the second aspheric lens is positioned so that an image of the first aspheric lens is an object of the second aspheric lens.

7. (Original) The system of claim 6, wherein the first and second aspheric lenses are substantially identical.

8. (Currently Amended) The system of claim 2 6, wherein the subsystem including the first and second aspheric lenses provides unit magnification.

9. (Cancelled) A telephoto lens comprising:

a first aspheric lens and a second aspheric lens positioned to form a subsystem that operates at finite conjugates; and

a magnifying system positioned to magnify an image of the subsystem.

10. (Currently Amended) ~~The A telephoto lens of claim 9 comprising:~~

a first aspheric lens and a second aspheric lens positioned to form a subsystem that operates at finite conjugates; and

a magnifying system positioned to magnify an image of the subsystem, wherein the magnifying system comprises a first negative lens, which has a negative focal length.

11. (Currently Amended) The lens of claim 10, ~~where-in~~ wherein the magnifying system further comprises a second negative lens, which has a negative focal length.

12. (Currently Amended) The lens of claim ~~9~~ 10, wherein the first and second

aspheric lenses are substantially identical.

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13. (Currently Amended) ~~The A telephoto lens of claim 9 comprising:~~
a first aspheric lens and a second aspheric lens positioned to form a subsystem that
operates at finite conjugates; and
a magnifying system positioned to magnify an image of the subsystem, wherein:
the first aspheric lens is positioned so that an object is at a focal point of the first
aspheric lens; and
the second aspheric lens is positioned so that an image of the first aspheric lens is
an object of the second aspheric lens.

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14. (Original) The lens of claim 13, wherein the first and second aspheric lenses
are substantially identical.

15. (Currently Amended) The lens of claim 9 13, wherein the subsystem
including the first and second aspheric lenses for a subsystem of provides unit
magnification.

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16. (New) A telephoto lens comprising:
a first aspheric lens and a second aspheric lens positioned to form a subsystem; and
a magnifying system positioned to magnify an image of the subsystem, wherein the
magnifying system comprises a first negative lens, which has a negative focal length.

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17. (New) The lens of claim 16, wherein the magnifying system further comprises
a second negative lens, which has a negative focal length.

18. (New) The lens of claim 16, wherein the first and second aspheric lenses are
substantially identical.

19. (New) The lens of claim 16, wherein the first and second aspheric lenses form
a subsystem of unit magnification.

20. (New) The system of claim 3, wherein the subsystem including the first and
second aspheric lenses provides unit magnification.

21. (New) The system of claim 10, wherein the subsystem including the first and second aspheric lenses provides unit magnification.

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